

APPENDIX C: FIRE MANAGEMENT PLAN SUMMARY

C.1 INTRODUCTION

This appendix is a summary of the Fire Management Plan (FMP) for Turnbull National Wildlife Refuge which was approved in 2001. The summary is intended to give readers an introduction to the FMP and how it relates to the rest of the planning process.

C.2 WILDFIRE RISK: NEED FOR FIRE MANAGEMENT PLAN

Due to the success of local fire agencies in preventing and suppressing wildland fires both on and off the Refuge for many years, extreme levels of live and dead fuels now occupy the forest environment, creating conditions of high probability for a large devastating wildland fire within the near future. One of the greatest threats to the resource integrity of Turnbull NWR is uncontrolled wildland fires. A medium sized wildland fire (5,000 to 10,000 acres) would alter the Refuge environment for decades to come, affecting the wildlife that inhabit the refuge, water quality, aesthetic value to visitors, and economic value to the community. A wildland fire could threaten numerous private residences built on lands immediately adjacent to the Refuge and on lands leased by the USFWS for wildlife easements. Several Refuge buildings, including historic structures, would be threatened by wildfire.

The expansion of the urban interface to the boundaries of the Refuge creates a complex fire environment, which constrains fire management options in both fire suppression and prescribed fire. Currently, there are hundreds of homes in the ponderosa pine forests surrounding the refuge creating contiguous fuels from the refuge through the urban interface. Extreme fire weather in the local fire environment is punctuated by hot, dry winds blowing from the southwest off the Palouse. There is the potential for a fire originating on or burning through the Refuge, attaining extreme size and extreme fire behavior in the process and continuing across Refuge boundaries into residential areas causing significant structural loss and damage. Similarly a fire could originate in the urban interface and spread onto the refuge damaging wildlife habitat and refuge facilities.

As the human population continues to increase around the Refuge boundaries, the potential for human caused fires increases proportionally. The combination of natural ignition potential coupled with the human factors that increase fire risk, including more residential development, traffic, visitors and human activity around the Refuge, creates an extremely high fire potential for the area. Large amounts of dead fuels that have accumulated in the pine forests within and surrounding the refuge also increase the risk.

Department of Interior policy requires that all Refuges with vegetation capable of sustaining fire, develop a fire management plan that details wildland fire suppression policies, the use of prescribed fire for attaining resource management objectives and fire program operational procedures. The Fire Management Plan is an extension of the Refuge Habitat Management Plan. It describes in detail fire management programs, activities and methods that will be undertaken by the U.S. Fish & Wildlife Service in meeting the wildland fire suppression objectives and fire management strategies which utilize prescribed fire to attain the habitat management goals established for Turnbull NWR. The plan also assesses the potential environmental effects of the proposed fire management program in relation to Refuge resources, the local environment as well as impacts to the public, adjacent landowners and surrounding communities. Consideration of these issues is required by the mandates of the *National Environmental Policy Act of 1972 (NEPA)* and other applicable federal laws and regulations.

C.3 FIRE PROGRAM PURPOSE AND CAPABILITY

The purpose of the wildland fire suppression program at Turnbull NWR is to provide the equipment and personnel necessary to suppress wildland fires that occur within or near the Refuge boundaries that threaten life, property and Refuge resources. It is also the intention of the USFWS to provide cooperative wildland fire suppression assistance to local, state and other federal firefighting agencies in the suppression of wildland fires when requested through the provisions of various mutual-aid agreements, cooperative agreements, and as mandated by federal law.

Current suppression capability on the Refuge consists of a 500 gallon 4 wheel drive quick attack engine (ICS type V), a 900 gallon extended operations engine (ICS type IV), a 300 gallon engine unit (ICS type VI) and a 3000 gallon water tender (ICS type II). All initial attack engines are "Class A" foam equipped to increase effectiveness in all aspects of fire operations. The Refuge also maintains a 20 person fire cache consisting of hand tools, chainsaws, personal protective equipment, field pack meals and first aid supplies. Various equipment such as porta-tanks and a "Mark III" porta-pump support fire suppression and prescribed fire activities

C.4 PLAN DECISIONS

It is the intention of the U.S. Fish & Wildlife Service to continue to suppress all wildland fires occurring within Turnbull NWR, including natural lightning ignitions. Prescribed fire will be utilized under controlled conditions and defined weather variables to mimic the natural role of fire in sustaining ecosystem functions, improve habitat conditions for wildlife and reduce hazardous accumulations of dead fuels for fire prevention.

The FMP needs to be viewed side by side with the Habitat Management Plan, completed in 1999, which describes specific actions and techniques that will be undertaken by the U.S. Fish & Wildlife Service to manage the various habitat types found within the Refuge. Since wildland fire played an essential role in the evolution of the ponderosa pine/bunchgrass ecosystem, prescribed fire is one of many techniques for manipulating vegetation within the Refuge to meet habitat management objectives.

The specific objectives of the wildland fire management program are to:

1. Protect human life and property both within and adjacent to Refuge areas.
2. Perpetuate, restore, replace or replicate natural processes where appropriate.
3. Protect natural and cultural resources from unacceptable impacts due to fire and fire management activities.
4. Promote an interagency approach to managing fires on an ecosystem basis.
5. Develop and implement a process to ensure the collection, analysis and application of high quality fire management information needed for sound management decisions.
6. Employ strategies to suppress all wildland fires, which minimize costs and resource damage, consistent with values at risk.
7. Prevent unplanned human-caused ignitions.
8. Restore and rehabilitate facilities lost in or damaged by fire or suppression activities.
9. Minimize and mitigate human-induced impacts to resources or natural processes.
10. Promote public understanding of fire management programs and objectives.
11. Conduct fire activities in a manner consistent with applicable laws, policies and regulations.
12. Organize and maintain a fire management capability which consistently applies the highest standards of professional and technical expertise.

13. Encourage research to advance understanding of fire behavior, effects, and ecology.
14. Integrate fire management with all other aspects of Refuge management.

Refuge fire crews, engines and qualified incident management personnel are national resources and will be fully utilized to respond to requests for assistance from other agencies. The Interagency Fire Agreement (No. 83-SIE) provides the basis for cooperation between the agencies of the Departments of the Interior and Agriculture on all aspects of wildland fire management and to facilitate the cooperative use of fire related resources during national or regional non-fire emergencies.

As part of the Refuge wildland fire pre-suppression program staff will identify areas of hazardous accumulations of woodland and range fuels and attempt to reduce wildland fire potential and effect by using various means of fuel reduction including; manual fuel reduction by crews, mechanical fuel reduction with Refuge equipment and hazard fuel reduction prescribed burns. The U.S. Fish & Wildlife Service will also participate and provide fire prevention activities and awareness programs within and around the Refuge in cooperation with other local and State fire agencies.

In addition to the interagency agreements between federal firefighting agencies, Turnbull NWR has entered into specific mutual aid agreements with local and state fire suppression agencies. These agreements are with Spokane County Fire District #3 and the State of Washington Department of Natural Resources.

The basic concept of these agreements is that no single agency has the suppression capability to control large and devastating wildland fires within local area and that it is more cost effective to enlist the support of other agencies within the region. These agreements are generally executed without exchange of funds between the agencies, with the understanding that unusual amounts or types of resources, (such as air tankers) or in extended attack situations will require some reimbursement. The agreements specify that each agency involved will retain autonomy in the command of it's individual resources through the implementation of the "Unified Command System" in which agency representatives of each agency involved in the suppression effort will be included within the command organization of the incident.

The existence of the wildland/urban interface surrounding the Refuge presents significant constraints on the use of prescribed fire in relation to potential liabilities resulting from escaped fires. An escaped fire resulting from a Refuge habitat management prescribed fire that burns into private property will cause severe constraints to be placed upon the use of prescribed fire by the FWS. Due to the importance of using prescribed fire in the management of the Refuge, extreme caution should be used when implementing prescribed fires. The USFWS must maintain a significant initial attack capability of engines, crews, dozers and water tenders to deal with this risk. Cooperative agreements and/or funding is required to provide for remuneration to local fire agencies to assist Refuge staff in the implementation of the prescribed fire program. The values at risk from an escaped prescribed fire are too great to allow escapes to occur into areas surrounding the Refuge. This constraint will continue to increase the urban interface continues to develop adjacent to the Refuge. Communication is necessary with local agencies about the magnitude of the wildland fire problem on and around the Refuge.

C.5 FIRE ECOLOGY

Fire is a natural phenomenon and has played a critical role in the ecosystem dynamics of natural communities represented within Turnbull National Wildlife Refuge (NWR). Before the advent of current wildland fire suppression capabilities, naturally caused fires burned thousands of acres of upland and wetland vegetation in eastern Washington each year. Prior to the advent of significant fire suppression

capabilities in the early third of this century, fires within the local region area were ignited primarily by lightning and possibly aboriginal burning practices. Lightning is frequent in eastern Washington during summer and fall. Lightning activity coincides with fuel moisture conditions conducive to natural ignitions, causing fires of significant size.

Natural disturbance is one of the primary progenitors in the maintenance and succession of natural vegetation communities. Fire is one of the most significant and frequent mechanisms for natural disturbance in the forest and range vegetation communities in western North America (Ahlgren & Ahlgren 1960). Extensive research has been conducted into the role of natural fire in the development and extent of the ponderosa pine/bunchgrass vegetation type, which predominates the upland communities of Turnbull NWR. Weaver (1955) and Kinatader (1998) studied fire scarred ponderosa pine stump sections in eastern Washington and found an average fire frequency of one fire every 8 years between the middle 1700's to the early 1900's. The frequency of fire in ponderosa pine communities is a function of the climatic conditions found within the habitats occupied by the species. Ponderosa pine generally prefers drier site soil conditions and requires full sunlight for successful reproduction without the competition of overstory canopy. Aboriginal ponderosa pine forests were described as forests consisting of large trees of even-age classes widely spaced apart, giving the appearance of a well managed park. Tree reproduction in these primal forests was in small even-aged groups growing in open clearings. These forest openings were generated by a variety of processes including windfall, insect attacks or mortality from old age. The accumulations of dead material within these areas of tree mortality created conditions conducive to intense fires which produced forest openings suitable for regeneration of the shade intolerant ponderosa pine seedlings (Biswell 1963, Weaver 1955).

The short fire return interval in ponderosa pine forests kept levels of dead material from accumulating to amounts in which the subsequent fire would be of sufficient intensity to cause mortality to the mature trees which are protected by a thick layer of bark. These frequent low intensity fires also kept shade-tolerant trees and shrubs out of the forest understory, which insured the perpetuation of the ponderosa pine forest type. Fire caused openings in the forest provided excellent regeneration sites for ponderosa pine seedlings; exposure to full sunlight, good penetration of the forest canopy of the available moisture, and high levels of available nutrients through pyrolytic decomposition of dead forest biomass.

As the ponderosa pine regeneration reached the sapling stage, heavy drops of pine needles (a characteristic of ponderosa pine which makes this community inherently more flammable) would accumulate to a degree sufficient to support a low intensity fire, which would serve to thin the stand of young trees. The surviving trees, growing with less competition, would subsequently become more vigorous and more resistant to future fires. Trees reaching maturity would thus be those with the best adaptive traits to survive fire and through time genetic selection favored ponderosa pine with characteristics that made them even more resistant to fire.

Natural fires occurring within the Channeled Scabland ecosystem that comprises Turnbull NWR probably ranged in size from small single tree fires to fires that burned thousands of acres over a period of several weeks to months, under the right conditions of fuel moisture and wind. These larger fires, which occurred less frequently than the more common low intensity lightning caused fire, burned not only the upland ponderosa pine communities, but the adjacent wetland communities as well. In very dry years, these fires had the capability to burn into the marsh basins, removing the dead biomass (peat) that accumulated in the marsh bottoms and in the process, deepen the wetland basin.

This same pre-historic scenario of frequent small fires, and infrequent large fires served to maintain other vegetation communities that are found within Turnbull NWR, including the annual grasslands,

perennial grasslands, shrub, and riparian communities. The riparian communities probably burned with less frequency (40 to 80 year intervals) and intensity due to the moisture content of the vegetation present. Long fire return intervals of large intense wildland fires probably played the most important role in the renewal of riparian communities due to the time periods required for sufficient fuel buildup and drought conditions sufficient to allow fire to carry through the usually moist riparian vegetation.

After wildland fire suppression capabilities improved, the natural role of fire in sustaining dynamic ecosystem conditions within the vegetation communities of Turnbull NWR declined. In the 1980's the U.S. Fish & Wildlife Service began a program of using controlled burning in marshes and forested areas within the Refuge to re-introduce the influence of fire in maintaining habitat conditions favorable to waterfowl production and natural diversity.

For more specific information about the vegetation and ecology of the various habitat types at Turnbull NWR, see the full Fire Management Plan or the Habitat Management Plan.

C.6 OTHER RESOURCE CONSIDERATIONS

Cultural Resources: All Refuge fire management activities require compliance with the National Historic Preservation Act. All prescribed fire plans are required to be reviewed by the Regional Cultural Resource Specialist for compliance with state and federal historic preservation acts.

Air Quality: Air quality and its relationship to the fire management program and smoke management is a very sensitive issue within the local communities surrounding Spokane. Portions of Spokane County have been designated as non-attainment areas for particulate matter (PM-10: particulates 10 microns or less in size) under the provisions of the Clean Air Act (Public Law 95-95). The Clean Air Act established "National Ambient Air Quality Standards" and provides the States with the primary jurisdiction in air quality management. Under the act, States are required to identify areas which have air pollutant levels which do not meet national standards. Working with Washington State Department of Natural Resources (DNR) and Spokane County Air Pollution Control Agency (SCAPCA) the U. S. Fish & Wildlife Service will minimize smoke impacts on the local communities from the larger controlled broadcast burns.

Literature Cited

- Ahlgren, I.F., and C.E. Ahlgren. 1960. Ecological effects of forest fires. Bot Rev 26:483-533.
- Biswell, H.H. 1963. Research in wildland fire ecology in California. In: Proc. First Annual Tall Timbers Fire Ecology Conf. Tall Timbers Research Station, Tallahassee, FL. pp. 63-97.
- Kinaterder, D. J. and S. J. Stein. 1998. Fire history at Turnbull National Wildlife Refuge in Eastern Washington. Unpublished report on file at Turnbull National Wildlife Refuge, Cheney, Washington. See above.
- Weaver, H. 1955. Fire as an enemy, friend, and tool in forest management. Journal of Forestry 53:499-504.